

### REMARKS

Claims 1-2 and 4-20 were pending.

Claims 1-2 and 4-20 are rejected.

Claims 1,5, 13, 14 and 17 are amended.

Claims 3-4, 6-9 and 13-14 are cancelled.

Claims 1, 5, 10-12, 15-20 are now pending.

#### **Amendments of claims 1, 5, 13, 14 and 17**

The above claims have been amended to more closely reflect the showing. The limitations of claims 2 and 4 have been inserted into claims 1 and 5 . Thus claims 3-4, 6-9 are cancelled as they no longer limit claims 1 or 5.

Claim 14 is amended to make consistent with claims 1 and 5 thus also including the limitations of claims 2 and 4.

As claim 9 is cancelled, claim 17 is amended to make dependent on claim 5.

The applicants preserve the right to file a continuation to recapture the broader subject matter given up in this amendment.

#### **Declaration**

The examiner finds the data inconsistent. Thus there can be no predictability with respect to the concentration of sizing solutions used or with the amount of pickup on the paper.

The Applicants were somewhat confused by the examiner's statements as to "inconsistent data". Thus a teleconference was arranged and carried out on August 6, 2008. No agreement as to patentability was made but examiner explained that the "inconsistent data" in the declaration related to the Cobb values for the final fractions in tables 1-3.

Table 1 Sizing concentration of 650 mg/L  
Cobb (g/m<sup>2</sup>) for Final Fraction is **53.1**

Table 2 Sizing concentration of 1000 mg/L

Cobb (g/m<sup>2</sup>) for Final Fraction is **107.0**

Table 3 Sizing concentration is 1400 mg/L

Cobb (g/m<sup>2</sup>) for Final Fraction is **24.8**

The applicants point out that the final fractions are literally the distillation bottoms and contain 72.2 wt. % polymeric residues and 27.8 wt. % ASA. This final fraction composition is far outside the present claim limitations and thus has no relevance to the showing.

The examiner appears to believe that because the final fraction in table 3 does not follow the same trend of increasing Cobb values in tables 1 and 2, the other data in the showing is also unpredictable.

The examiner has no basis for making this statement. The other data in the showing follows a clear trend in relation to Cobb values. There is every indication in tables 1, 2 and 3 for sample numbers 0 to 3 that the Cobb value numbers show a trend, that is when the ASA is purified to contain low amounts of polymeric or olefin residues Cobb values drop significantly. This effect is seen across all the concentration levels.

The examiner also states that these results are not at all unexpected given the increase in concentration of ASA. The applicants note that the drop in Cobb values for Tables 1 and 2 is by an amount that is considerable more than the increase in concentration of ASA from the removal of the olefin and polymeric impurities.

The applicants point also to the data shown in the application. Page 13 of the application shows clearly that distilled ASA shows significantly better:

1. Color (2 vs. 4-11 with undistilled). This is over a 100 % improvement in color.
2. Peroxide resistance (4.13 kg/m<sup>2</sup> vs. 8.41 kg/m<sup>2</sup>). This is almost a 50% improvement in peroxide resistance. This improvement cannot be explained by a 15.1 wt. % increase in the concentration of ASA (1.7 wt. % olefins +13.4 wt. % polymeric residue),
3. Lactic acid resistance (0.8 kg/m<sup>2</sup> vs. 1.1 kg/m<sup>2</sup>). This is over a 20 % improvement vs. and increase of 15.1 wt. % concentration due to the impurity removal,
4. Hydrolytic stability (10% hydrolysed in 8 hours compared with 20% hydrolysed). This performance criteria of the paper is doubled with a 15 wt. % reduction of impurities.

and

5. Finally, sizing performance (HST of 264 seconds compared with 167 sec). This is a 60 % improvement in the HST but a 15 wt. % increase in ASA concentration.

See results under **Summary and Conclusions** on page 13 for results confirmation.

The above results cannot be discounted by a 15 wt. % improvement in ASA concentration.

The applicants believe the data on page 13, even if the examiner discounts the data in the declaration, indicates unexpected advantages as listed above. There is no indication in any of the references that these performance criteria would be so dramatically impacted by using a purified form of ASA as a paper sizing.

The examiner also states that the data of the declaration fails to show surprising results with respect to the claimed limits of impurities and are not commensurate with the scope of the claims.

The applicants submit that the results are surprising as argued and substantiated by the data above. Furthermore, with the amending of the claims to more closely reflect the showing in the application and in the declaration, the applicants submit that the claims are unobvious and commensurate in scope with the claims.

### **35 USC 103(a)**

**Claims 1-2 and 4-20 are rejected under 35 USC 103(a) as being unpatentable over Tansley et al in view of Fakoukakis, US 4956478 and further in view of Frohlich, US 5969011 and Sonoda, JP62106091.**

Tansley discloses alkenyl succinic anhydride sizing agent for liquid packaging paper or board. Examiner agrees that Tansley does not disclose the polymeric residues or olefinic content of the ASA. See page 6 of last Office Action.

Although Fakoukakis does not use ASA as a sizing agent, examiner believes ASA to be well known for such use and since Fakoukakis discloses a nearly pure ASA (99%), examiner believes it would be obvious to combine Tansley with Fakoukakis to arrive at the present invention.

Fakoukakis suggests the use of nearly pure ASA (99%). The present claims require that the purity of the ASA be limited to a maximum of 0.5% by weight of polymeric residues and contains less than 0.5% by weight of olefins.

Thus there is no literal overlap with Fakoukakis and even if the examiner believes there to be overlap, the combination of greater than 99% pure ASA (in regard to the olefin and polymeric residues) as presently claimed in a paper sizing gives unobvious results as explained above. Thus the combination is unobvious in light of Tansley in view of Fakoukakis.

Furthermore, the present claims are commensurate in scope with the showing.

Reconsideration and withdrawal of the rejection of claims 1-2 and 3-20 is respectfully solicited in light of the remarks *supra* and submitted declaration.

Since there are no other grounds of objection or rejection, passage of this application to issue with claims 1-2 and 4-20 is earnestly solicited.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,



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